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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/679,357
Filing Date: October 07, 2003
Appellant(s): CESARINI ET AL.

Meredith H. Schoenfeld
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12-12-07 appealing from the Office action mailed 5-2-06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

The after final amendment filed 11-2-06 has not been entered.

The after final amendment filed 12-22-06 has been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon[1]

4,446,902	MADEC ET AL	5-1984
2,104,532	SOMMER	1-1938
2,011,552	HOOVER	8-1935
1,996,418	HARGRAVES	4-1935
JP 04-154408	JAPAN 408	5-1992
JP 06-247019	JAPAN 109	9-1994
GB 2,224,472	GREAT BRITAIN 472	5-1990
EP 565,270	EUROPE 270	10-1993
EP 722,851	EUROPE 861	7-1996
Admitted Prior Art	specification page 3 lines 1-7	

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

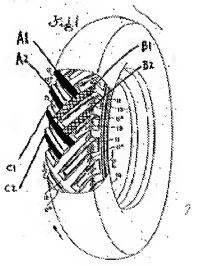
Hoover

Claims 135-141, 146, 149, 152 and 153 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoover (US 2011552) in view of Madec et al (US 4446902).

Hoover discloses a pneumatic tractor tire having a tread comprising only alternating groups of inclined grooves having constant width such that the tread has

[1] USPTO translation of Japan 06-247109 is included in the Appendix to this Examiner's Answer. USPTO translation of Japan 04-154408 was provided by the Examiner with the office action dated 5-2-06.

"substantially continuous tread portions" as claimed. See figures 1 and 2. Hoover's tire comprises tread edges and an equatorial plane wherein a "shoulder zone" extends from each tread edge toward the equatorial plane and an "equatorial zone" extends from the equatorial plane to the "shoulder zones". The grooves 13 are located in those zones. See figure 1. Since Hoover's tread is for a tractor tire ("large tire" with "large lugs"), stresses imparted to the ribs during rolling are discharged along the axis as claimed. As can be seen from figure 1, Hoover's alternating groups of transverse grooves 13 define "substantially continuous tread portions". Each transverse groove 13 of one group terminates in the equatorial zone at the same distance from the longest groove 13 of a group on the other side of the tread. Each substantially continuous tread portion extends from a tread edge and terminates in the equatorial zone at the same longest groove on the other side of the tread. See figure 1 of Hoover. A marked up copy of Hoover's figure 1 is provided below:



The markings were added by the examiner to facilitate discussion of Hoover. As can be seen from figure 1, Hoover shows alternating groups. Each group contains two transverse grooves 13 and two ribs (two substantially continuous tread portions). One group contains ribs A1, A2 (described by Hoover as being ribs 12, 12a). Another group contains ribs B1, B2 (described by Hoover as being ribs 11, 11a). Another group contains ribs C1, C2. Hoover teaches that the ribs are disposed such that each rib 11 and rib 11a has its inner end joined to a rib 12 intermediate the ends of the latter, and each rib 12 and rib 12a has its inner end joined to a rib 11 intermediate the latter's ends, and each rib terminates at its outer end at the margin of the tread. Hoover teaches that the arrangement of ribs is such that there are no exposed rib-ends in the medial portion of the tire tread to be subjected to wiping action. With the ribs being joined as shown and disclosed by Hoover, "substantially continuous tread portions" are defined by "groups of transversal grooves" as required by claim 135 and each of these tread portions extend continuously and uninterrupted from the tread edge at the shoulder zone and terminate at the longest groove of the group on the other side of the tread. None of Hoover's "substantially continuous tread portions" are interrupted by a circumferential groove / longitudinal groove. Hoover does not recite a carcass structure and belt structure. However, it would have been obvious to one of ordinary skill in the art to provide Hoover's pneumatic tractor tire with a carcass structure and belt such that the tire has a curvature ratio of not greater than 0.1 since (1) Hoover's tire is a tractor tire (instead of a motorcycle tire) and (2) Madec et al suggests providing a pneumatic

agricultural tire with a low median curvature for the tread lugs, a carcass and belt to improve performance and endurance.

Japan 408

Claims 39-53, 55-58, 61-62, 111-125, 127-130, 133-149, 151-154 and 157-158 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 408 (JP 4-154408) in view of Great Britain 472 (GB 2224472), Japan 109 (JP 6-247109) and the admitted prior art (specification page 3 lines 1-7) and optionally Sommer (US 2104532).

Independent claims 39, 58, 111, 130, 135 and 154 require each substantially continuous tread portion ending at an equatorial groove portion and each transversal groove ending at a predetermined distance from the equatorial groove portion. This subject matter is addressed by the suggestion from the applied prior art to connect substantially continuous tread portions defined by groups of transverse grooves on one side to the substantially continuous tread portions defined by groups of transverse grooves on the other side.

Claims 39 and 58 additionally require "the shoulder groove portion of each transversal groove has at least a portion having a width smaller than the width of the equatorial groove portion". Japan 109's teaching to use a groove width at the shoulder of 20-40% of the groove width in the central zone addresses this limitation.

Claims 111 and 130 additionally require "structurally stiff grid of elastomeric material portions fitted in with one another". Great Britain 472's teaching to form the profile containing inclined tread portions such that the profile has relatively high absorption of lateral forces and non-deformability of shape addresses this limitation.

Claims 135 and 154 additionally require "stresses imparted to the substantially-continuous tread portions are discharged along the axis".[2] Great Britain 472's teaching to form the profile containing inclined tread portions such that the profile has relatively high absorption of lateral forces and non-deformability of shape addresses this limitation.

[2] In claims 135 and 154, --a substantial part of-- before "stresses" was deleted in the after final amendment filed 12-22-06, which has been entered.

Japan 408 discloses a pneumatic tire having a size such as 225/50R16 (a high performance tire). The pneumatic tire has a (rubber) tread having a contact width. The tread comprises alternating groups of parallel continuous transverse grooves 4 extending from shoulder zones and into an equatorial zone wherein substantially continuous tread portions are defined by the transverse grooves.[3] The pneumatic tire is a low aspect ratio radial tire having a size such as 225/50R16 (high performance tire having aspect ratio = 50%). See bottom right on page 3 of Japan 408. Also, see page 8 of USPTO translation for Japan 408. The tire has good water drainage and reduced noise. The benefit of using groups of transverse grooves as disclosed by Japan 408 includes formation of large, medium and small cycle pitches A, B and C to allow the sound pressure levels to be dispersed and reduce pattern noises. The tire also prevents rain groove wandering phenomenon. In other words, wandering phenomenon caused by the interaction between grooves of the tread and straight "rain grooves" formed in the surface of the road is prevented. As can be seen from figure 2, the substantially continuous tread portions are wider than the slant transverse grooves, each transverse groove has a straight uniform width equatorial groove portion, and the longest transverse groove extends across the equatorial plane. The zigzag circumferential groove 7 (the only circumferential groove illustrated) extends through the center area of the tread. In each group, slant transverse grooves (**some of which cross the EP**) terminate at the zigzag circumferential groove (instead of a zigzag

[3] Japan 408 discloses fine grooves 10. Since the fine grooves 10 are illustrated as lines, one of ordinary skill in the art would readily understand these fine grooves 10 as being sipes - sipe being a term of art for a groove having a width less than 2 mm.

central web). The zigzag circumferential groove 7 interrupts the continuity of the tread pattern such that the substantially continuous tread portions on one side of the tire are not connected to the substantially continuous tread portions on the other side of the tire.

Great Britain 472 discloses a pneumatic tire for use at high speeds (a high performance tire) having high degree of water drainage. See page 3. Great Britain 472 teaches forming tread portions (rib profiles) defined between slant transverse grooves of a directional (rubber) tread of a pneumatic radial tire such that the tread portions (rib profiles) on one side of the tire are connected to the tread portions (rib profiles) on the other side of the tire so as to form a herringbone-like profiling which is continuous from the center of the tread surface to the open shoulders of the tire so that the profile has very low development of noise (page 4 lines 1-4) and relatively high absorption of lateral forces and non-deformability of shape for precise steering behaviour as required when traveling rapidly round bends (page 4 lines 13-20).

Japan 109 discloses a high performance tire having a size such as 225/50R16. See paragraphs 1 and 29 of the machine translation and the USPTO translation. Japan 109 is directed to a pneumatic radial tire having low noise and good water drainage. See abstract, paragraphs 19-24 of machine translation and USPTO translation. Japan 109 shows a directional tread comprising substantially continuous tread portions on one side of the tire connected to substantially continuous tread portions on the other side of the tire. The directional (rubber) tread has slant transverse grooves, but no circumferential grooves. Some of the slant grooves cross the EP (figure 1).

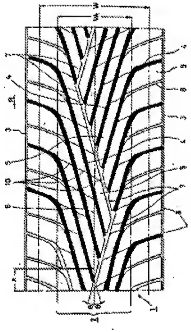
As to claim 111, it would have been obvious to one of ordinary skill in the art to connect the tread portions on one side of the directional tread of Japan 408's pneumatic radial tire having good water drainage to the tread portions on the other side of the tire so as to form a structurally stiff grid having slant grooves but no circumferential grooves (each substantially-continuous tread portion thereby ending at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves) since:

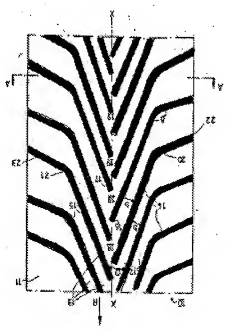
(1) Great Britain 472, directed to a pneumatic radial tire having *high degree of water drainage* (page 3 line 27) suggests forming tread portions defined between slant transverse grooves of a directional (rubber) tread of a pneumatic radial tire such that the tread portions (rib profiles) on one side of the tire are connected to the tread portions (rib profiles) on the other side of the tire so as to form a herringbone-like profiling which is continuous from the center of the tread surface to the open shoulders of the tire *so that the profile has very low development of noise (page 4 lines 1-4) and relatively high absorption of lateral forces and non-deformability of shape as required when traveling rapidly round bends (page 4 lines 13-20)*; and

(2) Japan 109, directed to a pneumatic radial tire having *low noise and good water drainage* (abstract, paragraphs 19-24 of machine translation and USPTO translation), suggests connecting substantially continuous tread portions on one side of the tire to substantially continuous tread portions on the other side of the tire in a directional (rubber) tread having slant transverse grooves but no circumferential grooves wherein *some of the slant grooves cross the EP* (figure 1); and optionally

(3) Sommer shows a directional (rubber) tire tread having alternating groups of slant transverse grooves (*some of which cross the EP* as shown in figure 8), but no circumferential grooves wherein tread portions on one side of the tire are connected to tread portions on the other side of the tire.

Japan 408 and Great Britain 472 are directed to pneumatic tires having similar directional tread patterns having no straight circumferential grooves. A side-by-side comparison of Japan 408 and Great Britain 472's tread patterns is provided below:





The dark markings were added by the examiner. As can be seen from the above comparison, Japan 408 and Great Britain 472's directional tread patterns are similar in that they each contain transverse grooves (the darkened grooves) which are gently inclined with respect to the circumferential direction in the shoulder zone and steeply inclined with respect to the circumferential direction in the central zone. In addition to

having structurally similar slant / inclined transverse grooves, Japan 408 and Great Britain 472's treads are similar in function because they secure drainage property, reduce noise and prevent rain groove wandering phenomenon (obtain insensitivity when traveling over rails). Japan 408 arranges groups of transverse grooves in an alternating fashion. With respect to the above marked copy of Japan 408's tread, the end of each dark transverse groove of one group is spaced by the same distance from the longest dark groove of the group on the other side of the tread. Japan 408's transverse grooves terminate at a zigzag circumferential groove 7 instead of a tread portion. Within each group, the grooves 4 are parallel, continuous and diagonally extended from the central zone to the shoulder zone. Japan 408's critical teaching is to omit straight circumferential grooves to prevent rain groove wandering phenomenon. Great Britain 472 motivates one of ordinary skill in the art to omit all circumferential grooves from Japan 408's tread to obtain very low development of noise and high absorption of lateral forces. A tread without circumferential grooves which has relatively high absorption of lateral forces and non-deformability of shape as per Great Britain 472 is considered to be "structurally stiff". This is especially true since "stiffness" in the original disclosure is relative to a tread having circumferential grooves which interrupt the continuity of the tread.

It is acknowledged that Great Britain 472 teaches locating the beginnings of the slant / inclined transverse grooves in the region of the center line so that large amounts of water are conducted to the shoulder in an unhindered manner over the shortest path. However, Japan 408 and Japan 109 teach obtaining good drainage even when some of

the slant transverse grooves cross the EP. See figure 2 of Japan 408 and figure 1 of Japan 109. Moreover, Japan 109 shows extending some of the slant transverse grooves across the EP even when the tread portions on one side are connected to tread portions on the other side such that the directional tread has no circumferential grooves.

As to tire construction, note that Japan 408's teaching that the tire is a pneumatic radial tire having a size such as 225/50R16. In any event: it would have been obvious to one of ordinary skill in the art to provide Japan 408's pneumatic radial tire with the claimed tire construction (i.e. carcass, sidewalls, beads, belt) since Great Britain '472 teaches that a pneumatic radial tire has a carcass, sidewalls, belt and beads (see figure 1, page 5 lines 30-34).

Japan 408 is silent as to curvature ratio. Providing Japan 408's tire with a curvature ratio not greater than 0.1 would have been obvious since (1) Japan 408 teaches that the tire, which is illustrated as having a relatively flat tread (figure 3) may have a size such as 225/50R16, which one of ordinary skill in the art would readily understand as being a car size tire and (2) the admitted prior art teaches that the curvature ratio of a conventional tire for motor vehicles (in contrast to motorcycle tires) has a value equal to about 0.05 and in any case is never higher than 0.1 (specification, page 3 lines 1-7).

As to claim 112, Japan 408's slant transverse grooves may be inclined at 20 degrees with respect to the equatorial plane of the tire. See abstract.

As to claims 113-116 and 128-129, see Japan 408's slant transverse grooves.

As to claim 117, see Japan 408's pitched tread pattern in which the slant transverse grooves end at a relatively short distance from the same slant transverse groove of an axially opposed group. Also, note the suggestion from Great Britain 472 and Japan 109 to connect Japan 408's tread portions on one side to the tread portions on the other side - the resulting zigzag central web separating the end of a slant transverse groove from the same slant transverse groove of an axially opposed group.

As to claim 118, the claimed radius of curvature would have been obvious in view of Japan 408's teaching to connect the steeply inclined part of the slant transverse groove to the gently inclined part of the slant transverse groove with a curved portion.

As to claim 119, the claimed angle for the shoulder groove portion would have been obvious in view of Japan 408, Great Britain 472 and Japan 109's teaching to incline the portion of the slant transverse groove in the shoulder at a relatively large angle.

As to claims 120 and 124, the claimed transversal groove width and depth would have been obvious and could have been determined without undue experimentation in view of Japan 408, Great Britain 472 and Japan 109's teaching to use the slant transverse grooves to discharge water to the shoulders of the tread.

As to claim 121, it would have been obvious to narrow the inclined slant transverse grooves in the shoulder zones to the claimed width of 40-60% since Japan '109 teaches that the narrow width branching groove may have a width of 40% of the inclined grooves to secure block rigidity and decrease noise.

As to claim 122, see figure 2 of Japan 408, which shows the ground contact width of the tread.

As to claim 123, Japan 408 suggests using plural slant transverse grooves in each group.

As to claim 125, note staggering of the groups of transverse grooves shown by Japan 408.

As to claim 127, it would have been obvious to add the claimed transverse notches in Japan 408's tread since Great Britain '472 suggests adding short blind grooves (notches) 48, 58 between inclined grooves to the shoulder zones of a tread.

As to claims 130 and 133-134, one of ordinary skill in the art would readily understand Japan 408 as teaching providing a set of front tire and rear tires since 225/50R16 is a car size tire. The claimed number of transversal grooves in each group would have been obvious in view of Japan 408's teaching to use plural slant transverse grooves in each group.

As to claims 39-53, 55-58 and 61-62, it would have it would have been obvious to narrow Japan 408's inclined slant grooves in the shoulder zones since Japan '109 teaches that the narrow width branching groove may have a width of 40% of the inclined grooves to secure block rigidity and decrease noise. Also, note comments on claims 111-125, 127-129 and claims 130,133-134.

As to claims 135-149, 151-154, 157-158, note Great Britain 472's teaching to connect so that the resulting profile has relatively high absorption of lateral forces and non-deformability of shape. With specific reference to claims 135 and 154, it would

have been obvious to provide Japan 408's tread without circumferential grooves such that during rolling, stresses imparted to the tread portions between the grooves 4 are discharged along the axis since (1) Japan 408 teaches using groups of inclined transverse grooves 4 instead of straight circumferential grooves in a directional tread and (2) Great Britain 472, also disclosing a directional tread with no circumferential grooves, teaches connecting the tread portions (rib profile elements) between inclined transverse grooves in a herringbone-like manner such that a profile is achieved which has a relatively high absorption of lateral forces and non-deformability of shape. In view of Great Britain 472's teaching to form inclined tread portions such that the profile has relatively high absorption of lateral forces and non-deformability of shape, there is a reasonable basis to conclude that during rolling, stresses imparted to such tread portions are discharged along the axis of the inclined tread portions. When the inclined tread portions which have absorbed the lateral forces leave the area of contact between the tire and the road, the stresses must be released. Since the tread portions in Japan 408 and Great Britain are inclined, the direction of this release is along the axis of the tread portions.

Claims 60, 132 and 156 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 408 in view of Great Britain 472, Japan 109 and admitted prior art and optionally Sommer as applied above and further in view of Europe '851 (EP 722851).

As to claims 60, 132 and 156, it would have been obvious to provide Japan 408's tires as a set of front tires and a set of different rear tires with different chords (different

tire section widths / different tread widths) as claimed in view of Europe '851's suggestion to use different front and rear tires wherein each of those tires comprises inclined grooves but no circumferential grooves.

Sommer

Claims 39-53, 55-58, 111-125, 127-130, 135-149 and 151-154 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sommer (US 2104532) in view of Great Britain '472 (GB 2224472), the admitted prior art (specification page 3 lines 1-7) and optionally at least one of Hargraves (US 1996418) and Japan '109 (JP 6-247109).

Sommer, directed to preventing sliding of a tire on a wet road, discloses a pneumatic vehicle tire (automobile tire) having a tread comprising repeating groups of four inclined transverse grooves of different lengths wherein the groups of inclined transverse grooves on one side of the center plane of the tire alternate with the groups of inclined transverse grooves on the other side so that a zigzag strip (zigzag rib) exists at the center plane of the tire. See figure 8, figure 8a and page 3 lines 17. Sommer's tire comprises tread edges and an equatorial plane wherein a "shoulder zone" extends from each tread edge toward the equatorial plane and an "equatorial zone" extends from the equatorial plane to the "shoulder zones". Sommer's grooves are located in those zones. See figure 8, 8a. Sommer states that the "tread of Figs. 8 and 8a has only slanting grooves 51 and ribs 53 running from the sides of the tire to its center plane in opposite directions " (page 3 lines 1-3). Accordingly, the tread has no circumferential

grooves. Figure 8a of Sommer is reproduced below:

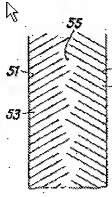


Fig. 8 a.

The width of the grooves is ¼ to 5 mm. Since Sommer's grooves can have a width greater than 2 mm (e.g. 5 mm), Sommer's grooves can have a width satisfying the definition for "groove" on page 1 of the specification. The width of the ribs (land portions between the grooves) is 3-10 mm. For example, the groove may have a width of 5 mm and the rib may have a width of 10 mm - the ribs thereby being wider than the grooves. See page 1 right column line 51 to page 2 left column lines 1-15. Sommer does not specifically recite that the tire has a carcass, belt and beads.

As to claims 39, 111 and 135, it would have been obvious to one of ordinary skill in the art to provide the automobile tire of Sommer with the claimed tire construction (i.e. carcass, sidewalls, beads, belt) since Great Britain '472, also disclosing a tire tread having inclined transverse grooves but no circumferential grooves, teaches using such a tread in a vehicle tire having a carcass, sidewalls, belt and beads (see figure 1, page 5 lines 30-34). Providing Sommer's tire with a curvature ratio not greater than 0.1 would have been obvious since (1) Sommer, which teaches that the tread may be used for an automobile, shows the profile of the tread as defining a relatively small curvature ratio

(see figure 1), (2) Great Britain '472, which teaches that the tread may be used for a vehicle, shows the profile of the tread as defining a relatively small curvature ratio (see figure 1) and (3) the admitted prior art teaches that the curvature ratio of a conventional tire for motor vehicles (in contrast to motorcycle tires) has a value equal to about 0.05 and in any case is never higher than 0.1 (specification, page 3 lines 1-7).

In claim 39, the claimed subject matter of "wherein each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves, wherein each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone" and "the longest transversal groove of the axially opposed group of transversal grooves extends from one of said axially opposed shoulder zones and terminates at a location between the equatorial plane and the sidewall opposite said one of the axially-opposed shoulder zones" reads on the arrangement of inclined transverse grooves shown by Sommers in figures 8 and 8a.

With respect to "each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially opposed group of transversal groove", the tread shown in figure 8 of Sommer satisfies this subject matter. Figure 8 of Sommer shows a group of four inclined grooves defining four continuous tread portions. For example, see the completely illustrated group at the lower right of figure 8 of Sommer wherein the first continuous tread portion is identified as being rib 53. Each of the grooves of this group is at "a predetermined distance" from

the longest groove of the axially opposed group of grooves. For example, the longest groove of this group ends at "a predetermined distance x" from the longest transversal groove of the axially opposed group. Another example, the shortest transversal groove ends at a "predetermined distance y" from the longest transversal groove of the axially opposed group. None of the independent claims require the same predetermined distance. None of the independent claims require the predetermined distance to be measured from the side of the longest groove instead of the terminal end of the longest groove.

With respect to "each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves", Sommer's continuous tread portions of one group "end at" the equatorial groove portion of the same longest transversal groove of the axially opposed group since the ribs 53 of one group terminate at a location adjacent the same longest transversal groove such that only the zigzag rib 55 is located between the ends of the continuous ribs 53 of one group and the equatorial groove portion of the same longest transversal groove of an axially opposed group of transversal grooves.

It is again noted that claims 39, 58, 111, 130, 135 and 154 fail to require the same predetermined distance. In any event: it would have been obvious to one of ordinary skill in the art to arrange Sommers' inclined transverse grooves of differing length such that the longest groove of each group crosses the EP and the end of each inclined transverse groove of one group on one side of the tread is spaced the same distance from the longest inclined transverse groove of the group on the other side of

the tread since Hargraves suggests arranging alternating groups of blind inclined transverse grooves of differing lengths in a tread for an automobile such that each blind inclined transverse groove ends at the same predetermined distance from an axially opposed longest inclined blind transverse groove for the advantage of giving sufficient traction, resisting skiding in all directions and reducing noise.

As to claim 111, "structurally stiff grid" reads on the profiling shown by Sommer in figures 8, 8a; "structurally stiff" being a relative expression failing to define a stiffness different from that disclosed by Sommers.

As to claim 135, "stresses imparted to the substantially-continuous portions are discharged along the axis" fails to define tread portions different from that disclosed by Sommer; it being noted that (1) at least part of stresses under at least one rolling condition must be discharged as claimed when Sommer's tire rolls and (2) claim 135 fails to specify what percentage of stresses are discharged along the axis.

As to claims 39, and 135, Sommer's grooves have uniform width. In any event: it would have been obvious to one of ordinary skill in the art to provide Sommer's transverse grooves, which are for preventing sliding on a wet road (page 1 lines 10-12), such that "the equatorial groove portion of each transversal groove has a uniform width" and "the shoulder groove portion of each transverse groove has at least a portion having a width smaller than the width of the equatorial groove portion" since Japan '109, also directed to a tire having inclined transverse grooves but no circumferential grooves, teaches providing inclined grooves in an equatorial zone with a uniform width and providing branching grooves in the shoulder zones with a smaller width than the inclined

grooves in the equatorial zone portion in order to obtain high wet performance and low noise. Hence, Sommer and Japan '109 are both directed to a directional tread pattern having inclined transverse grooves for preventing slipping on wet roads wherein the inclined transverse grooves on one side are shifted relative to the inclined grooves on the other side. See figure 8, 8a of Sommer and figures 1-3 of Japan '109. Japan '109 suggests improving such a directional tread pattern by using branching grooves having a narrower width and a larger angle of inclination to the EP than that for the inclined grooves. The improvement includes reducing noise. See for example paragraph 26 of the machine translation and USPTO of Japan '109. The combination of a branch groove 3 and an inclined groove 2 constitutes a transversal groove. With respect to figures 1-3 of Japan '109, uniform width inclined grooves 2 in figures 1 and 2 are an alternative to varying width inclined grooves in figure 2. The tread patterns of figures 1 and 2 are asymmetric tread patterns. Japan '109 teaches that the tread pattern may be symmetric instead of asymmetric. See paragraph 12 of machine translation and USPTO for Japan '109 and figure 2 of Japan '109.

As to claim 40, Sommer's inclined transverse grooves are inclined at angle of more than 45 degrees.

Claim 41 fails to define a tread pattern different from that shown by Sommer and suggested by the optional Hargraves.

As to claims 42-44, Sommer suggests straight and parallel inclined transverse grooves and Japan '109 suggests straight and parallel inclined grooves.

As to claim 45, Sommer and the optional Hargraves suggest ending the inclined grooves close the longest groove of the group on the other side of the tire.

As to claims 46-47, it would have been obvious to shape the inclined transverse grooves of Sommer such that the shoulder portion is less steeply inclined and connected via a curved groove portion with the equatorial zone portion of the inclined groove in view of (1) Japan '109's teaching to incline the narrow branching groove of the inclined groove 2 at a larger angle with respect to the EP and (2) Great Britain '472's teaching to increase the inclination of inclined grooves in shoulder zones of the tire as shown in figure 2 to provide a good non-skid facility, etc while maintaining open drainage paths. Hence, Japan '109 and Great Britain '472 motivate one of ordinary skill in the art to configure Sommer's transversal grooves so as to have a shallow inclined portion and a steeply inclined portion.

As to claim 48, Sommer teaches a groove width of 5 mm.

As to claims 49-50, it would have been obvious to narrow the inclined transverse grooves in the shoulder zones to the claimed width of 40-60% since Japan '109 teaches that the narrow width branching groove may have a width of 40% of the inclined grooves.

As to claim 51, Sommer shows four inclined grooves.

As to claim 52, Sommer teaches a groove depth of 6 mm.

As to claim 53, it would have been obvious to longitudinally stagger by about 50% of a mean pitch since Sommers and the optional Hargraves show circumferentially shifting one group of grooves relative to another group of grooves.

As to claim 55, it would have been obvious to add the claimed transverse notches in Sommer's tread since Great Britain '472 suggests adding short blind grooves (notches) 48, 58 between inclined grooves to the shoulder zones of a tread, which like that of Sommer has no circumferential grooves.

As to claim 56, Sommer's inclined grooves have the claimed decreasing length.

Claim 57 fails to define a tread pattern different from that shown by Sommer and suggested by the optional Hargraves.

As to claim 58, one of ordinary skill in the art would readily understand Sommer as teaching providing a set of front tire and rear tires having the tread pattern of figures 8, 8a since Sommer's teaches using the tire on an automobile. As to 3-5 (front) and 5-7 (rear), it would have been obvious to use five inclined grooves in each group since (1) Sommer's suggests using plural (i.e. four) inclined grooves in each group and optionally (2) Hargraves shows using five inclined grooves in a group.

As to the remaining claims, note comments on above specifically noted claims. With respect to claims 112 and 136, for example, see comments on claim 40.

Claims 54, 126 and 150 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sommer in view of Great Britain '472, the admitted prior art and optionally at least one of Hargraves and Japan 109 as applied above and further in view of Europe '270 (EP 565270).

As to claims 54, 126 and 150, it would have been obvious to add the claimed longitudinal slots to Sommer's tread since (1) Sommers teaches that the tread may also comprise circumferential grooves (figure 9) and (2) Europe '270 suggests adding

circumferential grooves 3, 3, which cross inclined grooves, between the shoulder zone and equatorial zone to improve resistance to hydroplaning.

Claims 59-62, 131-134 and 155-158 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sommer in view of Great Britain '472, the admitted prior art and optionally at least one of Hargraves and Japan 109 as applied above and further in view of Europe '851 (EP 722851).

As to claims 59-62, 131-134 and 155-158, it would have been obvious to provide the front and rear tires of Sommers as a set of front tires and a set of different rear tires as claimed in view of Europe '851's suggestion to use different front and rear tires wherein each of those tires comprises inclined grooves but no circumferential grooves.

(10) Response to Argument

BACKGROUND

Appellants argue that the specification offers no teaching to omit circumferential grooves to form a grid of elastomeric material portions fitted in with one another. See pages 21 and 22 of Brief filed 12-12-07. **This argument is incorrect and is contrary to the original disclosure.** The original disclosure teaches a tread pattern having no longitudinal grooves. See page 3 lines 18-23 of specification. Appellants' *discovery*, as described in the original disclosure, is the adaptation of a motorcycle tread having no longitudinal grooves (no circumferential grooves) to tires for motor vehicles. See page 2 lines 28-31 and page 3 lines 1-23 of specification. The *foundation* of the original disclosure is the use of "substantially continuous tread portions" which are expressly defined in the original disclosure as intending to indicate a portion of the tread which is

not interrupted by grooves so that the tread is substantially devoid of longitudinal hinge elements. See page 4 lines 15-22, page 7 lines 21-24, page 11 lines 23-26. By omitting longitudinal grooves to obtain "substantially-continuous tread portions", the stiffness of the tread is increased to reduce mobility of the tread to thereby avoid thermal-mechanical degradation.

With respect to omitting circumferential grooves, appellants argue that the specification teaches that the tread may comprise longitudinal slits. Page 21 of Brief filed 12-12-07. This argument is irrelevant. The *key feature* in appellants' original disclosure is omitting longitudinal grooves (circumferential grooves) so that the tread is devoid of longitudinal hinge elements. See original disclosure for example at page 2 lines 28-31, page 3 lines 1-23, page 4 lines 15-22, page 7 lines 21-24 and page 11 lines 23-26. A longitudinal slit is defined by the original disclosure as not being a longitudinal groove. Page 1 lines 21-25 of the original disclosure carefully defines "groove" and "slit" as being *mutually exclusive*. In particular, note that the original disclosure defines a "groove" as having a width greater than 2 mm whereas a "slit" is defined by the original disclosure as having a width equal to or less than 2 mm.

Appellants argue that the formation of a structurally stiff grid is not realized solely by omitting longitudinal grooves and that the formation of a structurally stiff grid is unrelated to the omission of circumferential grooves. This argument is misleading. The original disclosure states that a "... groove would interrupt the isotropy of the pattern, concentrating against the wall of said groove the release of the stresses and reducing in this way the advantages of the substantially isotropic matrix synergistically defined by

the group of struts" (page 11 of specification). A fair reading of the original disclosure is that the equatorial zone of the of the tread comprising the fitting in with one another of the substantially continuous tread portions to form the structurally stiff grid excludes longitudinal grooves (circumferential grooves) which define longitudinal hinge elements. The original disclosure permits the use of longitudinal slits and a central depression in the equatorial zone. Unlike "grooves" having a width greater than 2 mm, the slits have a small width ($w \leq 2$ mm) and thereby do not interrupt the continuity of the substantially continuous tread portions. Unlike "grooves" having a width greater than 2 mm, the central depression allows the pattern defined by the transverse grooves and substantially continuous tread portions to pass through the bottom thereof. If a longitudinal groove having a width greater than 2 mm is disposed in the equatorial zone of the tread, the tread portions would not be "substantially continuous", the stresses would be released at the groove wall instead of "discharged" as intended, and the grid would not be as "stiff" as desired.

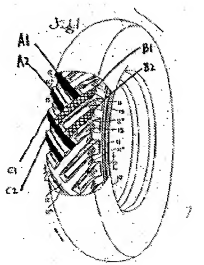
Appellants comment and the examiner agrees that the original disclosure describes longitudinal slots (disconnection grooves) 20, 21. The disclosed and illustrated longitudinal disconnection grooves 20, 21 differ from the slits both in their size and placement. The original disclosure shows the longitudinal slots / grooves 20, 21 as being located axially *outside of* the "substantially continuous tread portions" 18.

HOOVER

Appellants argue that that Hoover fails to teach the claimed substantially-continuous tread portion ending at an equatorial groove portion of a same transversal

groove of an axially-opposed group of transversal grooves. Examiner disagrees. Hoover discloses the basic concept of a tire tread having alternating groups of grooves extending from axially opposed shoulder zones, but not having circumferential grooves. Hoover's alternating groups of transverse grooves 13 define "substantially continuous tread portions". Each transverse groove 13 of one group terminates in the equatorial zone at the same distance from the longest groove 13 of a group on the other side of the tread. Each substantially continuous tread portion extends from a tread edge and terminates in the equatorial zone at the same longest groove on the other side of the tread. See figure 1 of Hoover.

Appellants argue that the third rib from the top in figure 1 of Hoover does not end at the same transversal groove as the other two ribs above it. Appellants are incorrect. A marked up copy of Hoover's figure 1 is provided below:



The markings were added by the examiner to facilitate discussion of Hoover. As can be seen from figure 1, Hoover shows alternating groups. There are two transverse

grooves and two corresponding ribs in each group. One group of ribs contains ribs A1, A2 (described by Hoover as being ribs 12, 12a). In Hoover's figure 1, there is no third rib 12c. Another group of ribs contains ribs B1, B2 (described by Hoover as being ribs 11, 11a). In Hoover's figure 1, there is no third rib 11c. Another group of ribs contains ribs C1, C2. Hoover teaches that the ribs are disposed such that each rib 11 and rib 11a has its inner end joined to a rib 12 intermediate the ends of the latter, and each rib 12 and rib 12a has its inner end joined to a rib 11 intermediate the latter's ends, and each rib terminates at its outer end at the margin of the tread. With the ribs being joined as shown and disclosed by Hoover, "substantially continuous tread portions" are defined by "groups of transverse grooves" as required by claim 135 and these tread portions extend continuously and uninterrupted from the tread end at the shoulder zone and terminate at the longest groove of the group on the other side of the tread. None of Hoover's "substantially continuous tread portions" are interrupted by a circumferential groove / longitudinal groove.

Appellants argue that the Examiner's marked up copy of Hoover's figure 1 is misleading since it places the ribs into groups without any basis. This argument is without merit because Hoover describes "It will be seen from reference to Figure 1 that the ribs 11 are longer than the ribs 11a, and that said ribs are arranged in alternation about the tire. The ribs 12, 12a are similarly of different length and are also similarly arranged in alteration" (line 53 of left column to line 1 of right column on page 1).

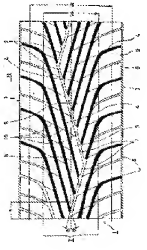
Appellants argue that the third rib (the rib shown below B2 as marked by the examiner on the right hand side) is properly part of the group above it. Appellants are

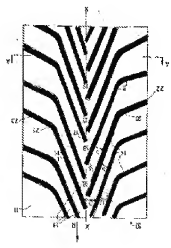
incorrect. The right hand side of figure 1 of Hoover indicates an upper group of ribs 11 and 11a (marked as ribs B1 and B2 by the examiner) and a lower group of ribs 11 and 11a (not marked by the examiner). The lower rib 11 belongs with the lower rib 11a instead of the upper ribs 11 and 11a.

It is noted that appellants fail to argue that the claimed carcass, belt and curvature ratio of not greater than 0.1 would not have been obvious in view of the teachings of Hoover and Madec et al. It is also noted that appellants fail to argue that stresses imparted to Hoover's ribs during rolling are not discharged along an axis.

JAPAN 408

With respect to claims 111 and 130, appellants argue that simply connecting the tread portions on one side of the directional tread of Japan 408's tire to the tread portions on the other side is insufficient to form the claimed structurally stiff grid material portions fitted in with one another. Page 19, Brief filed 12-12-07. This argument is not persuasive. A side-by-side comparison of Japan 408 and Great Britain 472's tread patterns is provided below:





The dark markings were added by the examiner. Japan 408 and Great Britain 472 are directed to pneumatic tires having similar directional tread patterns having no straight circumferential grooves. As can be seen from the above comparison, Japan 408 and Great Britain 472's directional tread patterns are similar in that they each contain transverse grooves (the darkened grooves) which are gently inclined with respect to the circumferential direction in the shoulder zone and steeply inclined with respect to the circumferential direction in the equatorial zone. In addition to having structurally similar transverse grooves, Japan 408 and Great Britain 472's treads are similar in function because they secure drainage property, reduce noise and prevent rain groove wandering phenomenon (obtaining insensitivity when traveling over rails). Japan 408, like appellants, arrange groups of transverse grooves in an alternating fashion. With respect to the above marked copy of Japan 408's tread, the end of each dark transverse groove of one group is spaced by the same distance from the longest dark groove of the group on the other side of the tread. Japan 408's transverse grooves terminate at a zigzag circumferential groove 7 instead of at a tread portion. Within each group, the grooves 4 are parallel, continuous and diagonally extended from the central zone to the shoulder zone. Japan 408's critical teaching is to omit straight circumferential grooves to prevent rain groove wandering phenomenon. Great Britain 472 motivates one of ordinary skill in the art to omit all circumferential grooves from Japan 408's tread to obtain very low development of noise and high absorption of lateral forces and non-deformability of shape. A tread without circumferential grooves which has relatively high absorption of lateral forces and non-deformability of shape as per Great Britain 472

is considered to be "structurally stiff". This is especially true since "stiffness" in the original disclosure is relative to a tread having circumferential grooves which interrupt the continuity of the tread.

With respect to claims 111 and 130, appellants argue "... the key issue is not whether the tread portions on one side of the tread are 'connected' to the tread portions on the other side of the tread but, rather, whether or not the substantially continuous tread portions are mutually 'fitted in with one another'". Page 19 of Brief filed 12-12-07. This argument is not persuasive. The original disclosure states:

> In the following description and in the appended claims, the term: "substantially continuous tread portion" is intended to indicate a portion of the tread which is not interrupted by grooves even though it is crossed by slits however oriented. According to the invention, the Applicant has found in particular that the aforesaid groups of substantially continuous tread portions alternately extending from opposite shoulder zones towards the equatorial plane of the tire, form a sort of "grid" or "matrix" of elastomeric material portions fitted in with one another and substantially devoid of longitudinal hinge elements. Specification page 4, emphasis added.
>
> In the following description and appended claims, the terms:
> -"groove" and "slit" are intended to indicate grooves formed on the tire tread having a width greater than and, respectively, equal to or lower than 2mm;
> -"longitudinal" and "longitudinally" are intended to indicate entities measured along the circumferential development of the tire. Specification page 1, emphasis added.

As can be seen from the above description, the original disclosure permits the substantially continuous tread portions to be crossed by slits having a width equal to or lower than 2 mm, which are commonly described by one of ordinary skill in the art as being "sipes". Such slits read on (1) slits 23, 24, 25, 26, and 27, which have width of 1.5 mm and are described on page 19 of the specification, (2) fine grooves 10, which

are illustrated by Japan 408 as being lines, (3) fine incisions, which are described by Great Britain 472 on pages 8 and 10 and (4) sipes S, which have a width of 1 mm and are illustrated by Japan 109 as being lines.[4] As can also be seen from the above description, the claimed "substantially continuous tread portions" exclude grooves having a width greater than 2 mm. By omitting the wave shaped groove 7 and connecting the tread portions on one side of Japan 408's tread to the tread portions on the other side of Japan 408's tread, the continuity of the tread pattern is not interrupted and the "substantially continuous tread portions" are fitted in with one another. This uninterrupted tread pattern forms a grid which is structurally stiff relative to a tread pattern which is interrupted by circumferential grooves.

With respect to claims 39, 58, 111, 130, 135 and 154, appellants argue that the proposed modification of Japan 408 would critically alter the key features of the tire of Japan 408 rendering the same inoperable for its intended purpose. Page 31 of Brief filed 12-12-07. Appellants are incorrect. Japan 408 teaches diagonally extending continuous parallel grooves 4 from the center region 2 to the shoulder regions 3 instead of using straight circumferential grooves and this invention of Japan 408 is not being modified. It is emphasized that Japan 408 attaches no importance and criticality to making the grooves 4 form wave shaped grooves 7 that cross the centerline in a zigzag manner.

With respect to claims 39, 58, 111, 130, 135 and 154, appellants argue that there

[4] Paragraph 17 of the USPTO translation incorrectly describes "S" as being "side ply". The description "SAIPU" in paragraph 17 of the machine translation more closely corresponds to the correct description of "sipe" (a term of art).

is a necessary implication that wave-shaped groove 7 crosses the centerline in a zigzag manner. Page 31 of Brief filed 12-12-07. Japan 408 teaches using continuous parallel grooves extending diagonally from the center region to the shoulder regions instead of straight circumferential grooves (straight longitudinal grooves) to address the problem of straight circumferential grooves causing so-called groove wandering. Japan 408's teaching to avoid straight longitudinal grooves corresponds to applicant's disclosure that the uninterrupted tread pattern has no longitudinal grooves. Contrary to appellants' arguments, the key feature in Japan 408 is a tread having no straight longitudinal grooves. See pages 3 and 4 of Japan 408. The examiner agrees that adding straight longitudinal grooves such as longitudinal disconnection grooves 21, 22 would critically alter the key feature of the tire of Japan 408. However, no such modification of Japan 408's tire is being made.

With respect to claims 39, 58, 111, 130, 135 and 154, appellants argue that the proposed modification of Japan 408 are of features considered to be essential, such as the multiple parallel continuous grooves 4 running from the central portion to both shoulder portions and enclosing the rows of blocks 5. Page 29 of Brief filed 12-12-07. This argument is not persuasive. If Japan 408's wave shaped (zigzag) circumferential groove 7 is omitted, Japan 408's tread would continue to comprise alternating groups of parallel continuous grooves 4. Japan 408's tread would also continue to comprise blocks wherein the blocks on one side are connected to the blocks on the other side. Japan 408's blocks defined by the inclined grooves 4 directly correspond to the ribs 12,

13 of Great Britain, the "blocks" defined by the inclined grooves 2 of Japan 109 (figure 2) and the ribs 53 defined by the inclined grooves 51 of Sommer.

With respect to claims 39, 58, 111, 130, 135 and 154, appellants argue that the grooves of Japan 408 are continuous grooves running from the central portion to both shoulder portions and therefore terminate in the shoulder portion and not at a location prior to the shoulder zone. Examiner agrees that the parallel continuous grooves 4 on one side of the tire terminate in the shoulder region and that the parallel continuous grooves 4 on the other side of the tire terminate in the shoulder region. Examiner also acknowledges that the parallel continuous grooves 4 on the one side of the tread *terminate* at the wave shaped circumferential groove 7 and the parallel continuous grooves 4 *terminate* at the wave shaped circumferential groove 7.[5] However, Japan 408 motivates one of ordinary skill in the art to eliminate "straight circumferential grooves" to prevent the occurrence of groove wandering while securing draining properties (page 6 lines 5-8) and Great Britain 472 motivates one of ordinary skill in the art to eliminate *all* circumferential grooves so that the tread has low noise and relatively high absorption of lateral forces and non-deformability of shape as required when traveling rapidly round bends.

With respect to claims 39, 58, 111, 130, 135 and 154, appellants argue that removing the circumferential groove in the center of the tire would interfere with the functioning of the tire by altering the directional pattern. Pages 29-30 of Brief filed

[5] The parallel continuous grooves 4 on one side of the tire are not parallel to the parallel continuous grooves 4 on the other side the tire because the grooves 4 on the one side and the grooves 4 on the other side are oppositely inclined.

12-12-07. This argument is not persuasive. First: Appellants fail to describe this interference. Second: Appellants fail to consider the prior art as a whole. Appellants fail to consider that Japan 408 and Great Britain 472 are directed to the same type of tire (high performance tire) having the same type of tread (inclined grooves forming directional tread pattern) for addressing the same properties of drainage, noise and insensitivity to rain grooves formed in a road surface. Given the high similarity of the treads of Japan 408 and Great Britain 472, combining the known feature of alternating groups of inclined transverse grooves with the known feature of a tread having inclined transverse grooves without being interrupted by longitudinal grooves (circumferential grooves) would obtain the **predicted and expected** result of a directional tire having desired drainage, low noise and insensitivity to rain grooves and relatively high absorption of lateral forces and non-deformability of shape for very precise steering behaviour when traveling rapidly round bends.

With respect to claims 39, 58, 111, 130, 135 and 154, appellants argue that Great Britain 472 fails to disclose that "each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially opposed group of transversal grooves" and "each of the transversal grooves ends at a predetermined distance form the equatorial portion of a longest transversal group so that all of the transversal grooves end within the equatorial zone". Page 23 of Brief filed 12-12-07. The above noted language requires **groups of transversal grooves**. Examiner acknowledges that Great Britain 472 does not recite that the directional tread comprises groups of transversal grooves. However, Japan 408 suggests a directional

tread having groups of transversal grooves. In view of the substantial similarity of the tread patterns of Japan 408 and Great Britain 472 (directional tire tread pattern having transversal grooves with steeply inclined equatorial groove portion and gently inclined shoulder groove portion, but having no straight circumferential grooves), there is ample suggestion for a directional tread having both alternating groups of inclined transversal grooves and no circumferential grooves. The benefit of using groups of transverse grooves as disclosed by Japan 408 includes formation of large, medium and small cycle pitches A, B and C to allow the sound pressure levels to be dispersed and reduce pattern noises. The benefit of using no circumferential grooves as per the disclosure of Great Britain 472 includes obtaining a tread having low noise and relatively high absorption of lateral forces and non-deformability of shape as required when traveling rapidly round bends.

Appellants argue that Japan 408 nowhere suggests that the properties therein are in any way unsatisfactory, or in need of improvement, with respect to noise or absorption of forces. This argument is not persuasive since appellants have not cited any authority holding that the primary reference must suggest a need for improvement in order for a 103 rejection to be proper.

With respect to claims 111 and 130, appellants argue that Great Britain 472 and Japan 109 fail to teach "a structurally stiff grid of elastomeric material portions fitted in with one another". Page 20 of Brief filed 12-12-07. Examiner disagrees since the tread portions of the high performance tires of Great Britain 472 (figures 2-5) and Japan 109 (figure 1) are not interrupted by circumferential grooves, whether they be straight or

zigzag. It is emphasized that Great Britain 472 teaches that "a profile is achieved which has a relatively high absorption of lateral forces and non-deformability of shape, which is required, for example, when traveling rapidly round bends. The general driving and steering behaviour is very precise." (page 4).

With respect to claims 135 and 154, appellants argue that nothing in Great Britain 472 teaches that stresses are discharged along the axis of the substantially continuous portions. Pages 22-23 of Brief filed 12-12-07. The tread portions defined by Great Britain 472's inclined transverse grooves are uninterrupted and have an inclined configuration. Great Britain 472 teaches that the tread profile has a relatively high absorption of lateral forces and non-deformability of shape. When the tire rotates such that the area of the tread which has absorbed the lateral forces moves out of the ground contact patch, the stresses must be released. In view of Great Britain 472 and appellants' similar construction (uninterrupted and inclined configuration) and properties (absorb forces), there is a reasonable basis to conclude that stresses are discharged along the axis of Great Britain 472's tread portions.

With respect to claims 135 and 154, appellants argue that Japan 408 and Great Britain 472 fail to teach "wherein the substantially-continuous tread portions are provided about an axis such that during rolling, stresses imparted to the substantially-continuous tread portions are discharged along the axis". Pages 28-29 of Brief filed 12-12-07. This argument is not persuasive. The description of stresses being discharged along the axis fails to require tread structure not suggested by Japan 408 or Great Britain 472 since (1) the tread of Japan 408 and Great Britain 472 comprise inclined

substantially continuous tread portions, (2) tires are subjected to lateral forces during use thereof and (3) any force may be resolved into coplanar vector components. None of the claims require a substantial part of the stresses to be discharged along the axis.

Appellants argue that Great Britain 472's tread has mobile portions such as bridging members or webs (18, 19). This argument is not persuasive since attorney arguments cannot take the place of evidence in the record. See MPEP 716.01(c).

Appellants argues that Great Britain 472's tread surface profile must have some degree of mobility because Great Britain 472 discloses at page 3 lines 17-20 that the tread surface profile, which comprises a central web, adapts to the direction of rotation. This argument is not persuasive. First: The description of "is adapted to the direction of rotation" at page 3 lines 17-20 in Great Britain 472 merely means that the tread surface profile is a directional tread - the tread has a preferred direction of rotation. This description is unrelated to mobility of rubber. Second: Great Britain 472's tread profile (grid) is "stiff" since the tread profile has "non-deformability of shape" and is "not interrupted by grooves".

With respect to Great Britain 472, appellant refers to "the different objective of maintaining substantially constant, independent of the wear conditions of the tread, performances in general of a high performance tire, and in particular, its grip on dry ground." (page 21 Brief filed 12-12-07). No unexpected results over the applied prior art commensurate in scope with the claims has been shown.

Appellants' argue Japan 109 does not recite the key features of the substantially continuous tread portions ending at an equatorial groove portion and each groove

ending at a predetermined distance from the equatorial tread portion. These features relate to a tread having groups of grooves, but not circumferential grooves. The feature of alternating groups of transverse grooves is disclosed by Japan 408. The feature of omitting circumferential grooves is taught by Great Britain 472 and Japan 109. It is noted again that applicant obtains the "structurally stiff grid" in a tread pattern relative to the same tread pattern interrupted by circumferential grooves by omitting the circumferential grooves.

Appellants argues that Japan 109 fails to show each group having its own longest groove as set forth in claims 39 and 58. More properly, each of the groups of Japan 408 has a longest groove 4 that terminates between the equatorial plane and the shoulder.

Appellants' arguments regarding the optional Sommer are not persuasive since Sommer suggests omitting all circumferential grooves, when like Japan 408, the tread comprises alternating groups of inclined transverse grooves.

With respect to Europe 851, appellants comment that claims 60, 132 and 156 are patentable at least due to the direct or indirect dependency of these claims on one of the independent claims. In view of this comment, attention to directed to the examiner's remarks regarding the independent claims.

SOMMER

With respect to claims 39, 58, 111, 130, 135 and 154, appellants argue that figures 8 and 8a of Sommer clearly shows that some of the substantially-continuous tread portions or ribs 53 defined between the transversal grooves 51 do not end at an

equatorial groove portion of a same transversal groove 51 of an axially opposed group of transversal grooves because some of the tread portions 53 end at a zone beyond the end of the longest transversal groove of the axially opposed transversal grooves 51. Page 33 of Brief filed 12-12-07. This argument is not persuasive. Sommer's continuous tread portions of one group "end at" the equatorial groove portion of the same longest transversal groove of the axially opposed group since the ribs 53 terminate at a location adjacent the same longest transversal groove such that only the zigzag rib 55 is located between the ends of the continuous ribs 53 of one group and equatorial grove portion of the same longest transversal groove of an axially opposed group of transversal grooves. The same is true of appellants' substantially continuous tread portions. Figure 2 of the original disclosure illustrates a "zigzag rib" wherein this "zigzag rib" has a width "d" and is located between the substantially continuous tread portions 18 and the same longest transversal groove of the opposed group.

With respect to claims 39 and 58, appellants argue that that Sommer's groove 51 terminates at the equatorial plane. Pages 32-33 of Brief filed 12-12-07. This argument is not persuasive. First: Figures 8 and 8a of Sommer show the longest transverse groove 51 of each group crossing the equatorial plane. As to page 3 left column lines 12-17, Sommer describes a zigzag rib having a small width in the center plane running parallel with the center plane of the tire. This description of a circumferential zigzag rib on the center plane is consistent with and supports the finding that some of the transverse grooves 51 cross the center plane. The zigzag rib described by Sommer

corresponds to appellants' "zigzag rib" having small width "d" in figure 2 of applicant's disclosure.

With respect to claims 39 and 58, appellants argue that the term "zigzag" requires only a certain shape (i.e., a line having sharp bends or angles from side to side) and does not inherently require that the grooves cross the equatorial plane. Page 33 of Brief filed 12-12-07. Appellants are viewing the term "zigzag" in a vacuum. In light of the of the illustration of the grooves and rib in figures 8 and 8a, Sommer's teaching that the grooves of different length form the zigzag rib and the term "zigzag" (which is descriptive of a line that proceeds by short, sharp turns in alternating direction), one of ordinary skill in the art would readily appreciate that some of the grooves 51 cross the center plane so as to form a circumferential zigzag rib disposed on the center plane.

With respect to claims 111 and 130, appellants argue that Sommer's tread allows deformation of each rubber rib and therefore teaches away from using a "structurally stiff grid". Pages 36-37 of Brief filed 12-12-07. This argument is not persuasive. First: Sommer teaches that the ribs may deform partly or entirely. See page 2 right column lines 35-38. One of ordinary skill in the art would readily appreciate that the ribs "partly deform" when wider ribs and grooves are used (e.g. when ribs having a width of 10 mm and grooves having a width of 5 mm are used as described at page 2 left column lines 7-9). Second: "structurally stiff" is a relative term which fails to require a stiffness greater than that of Sommer's tread. None of the independent claims describe the stiffness in numerical values using an art recognized term such as modulus. Third:

Instead of describing the stiffness using art recognized terms such as modulus, the original disclosure states "without ... too much deforming themselves" (page 4 lines 27-30). This description in the specification reveals that the substantially continuous tread portions allow some deformation. How much can the claimed substantially continuous tread portions deform? Answer: Not too much. None of the claims exclude all deformation and bending. It is not seen why "not too much" limits the scope of claims 111 and 130 so as to distinguish over Sommer. The description of "without deforming too much" is not seen as being mutually exclusive of "partly deform". Fourth: Appellants fail to argue that the ribs in Sommer's figure 8, 8a tread deform along the rib toward the tread edge. In other words, "structurally stiff grid" does not require the grid to be "structurally stiff" in all directions Fifth: Sommer's figure 8, 8a must be "structurally stiff" in order to support the weight of the vehicle.

With respect to claims 135 and 154, appellant argues that Sommer's ribs are deformed. Page 37 of Brief filed 12-12-07. Examiner agrees that Sommer teaches that the ribs may partly deformed (not too much deformed) *as an alternative to* entirely deformed. See page 2 right column lines 35-38. However, none of the claims exclude all deformation.

With respect to claims 135 and 154, appellants argue that Sommer teaches that the ribs deform under the load of the wheel and the ribs lean against each other. Examiner agrees that Sommer teaches that the width of the grooves and the ribs may be chosen such that each rib deforms and leans against the next rib. See page 2 left column lines 40-49. One of ordinary skill in the art would readily expect that this leaning

against property is obtained when small widths are used such as a groove width of 1/4 mm (0.25 mm). However, one of ordinary skill in the art would readily expect that this leaning against property is not obtained when larger widths (e.g. 5 mm groove width, 10 mm rib width) are used. In contrast, one of ordinary skill in the art would readily expect that partial deformation of the ribs is obtained when the larger widths are used.

With respect to claims 135 and 154, appellants argue that stresses are not uniformly discharged. This argument is not commensurate in scope with the claims and is therefore not persuasive since none of the claims require "uniformly" discharging of stresses.

With respect to claims 135 and 154, appellants argue that there is no teaching in Sommer that discloses stresses being imparted to the tread portion, let along "discharged along the axis". Page 37 of Brief filed 12-12-07. In Sommer's figure 8, 8a tire, stresses must be discharged along the axis since Sommer's tire, like all tires used on a vehicle, is subjected to stresses during rolling and Sommer's figure 8, 8a tread includes alternating groups of inclined ribs and inclined transverse grooves but no circumferential grooves. Any force may be resolved into two coplanar vector components. A component of the force imparted to Sommer's rib must be discharged along the axis of the rib. Claims 135 and 154 require nothing more.

Appellants argue that Sommer fails to suggest that the properties disclosed therein are in any way unsatisfactory, or in need of improvement with respect to noise, traction, or resisting skid. Page 38 of Brief filed 12-12-07. This argument is not persuasive since appellants have not cited any authority holding that the primary

reference must suggest a need for improvement in order for a 103 rejection to be proper.

With respect to claims 39, 58, 111, 130, 135 and 154, appellants argue that Hargraves does not teach all of the claimed limitations. Examiner agrees that Hargraves does not anticipate the claims under 35 USC 102. However, Hargraves teaches alternating groups of inclined transversal grooves and suggests locating the ends the inclined grooves of one group in Sommer's figure 8, 8a tread at the same distance from the longest groove of the axially opposed group. In other words, Hargraves and Sommer teach the same technical feature of groups of inclined transverse grooves extending from a tread edge and terminating before reaching the other tread edge. These blind grooves, each having one end open at the tread edge and the other end closed at location between the tread edges, are common to both Hargraves and Sommer. Hargraves shows an alternative known arrangement for such blind grooves for the purpose of obtaining desired low noise and resistance to skidding in all directions. When the blind transverse grooves of Sommer's end at the same distance from the longest groove of the axially opposed group as per the arrangement disclosed by Hargraves, the continuous tread portions must end at the same transversal groove of an axially opposed groove because only the zigzag strip / zigzag rib is located between the groups of grooves on one side and the groups of grooves on the other side.

Appellants argue that Hargraves discloses a V-shaped transversal groove 17a that axially crosses the entire tread band. More properly, Hargraves teaches alternating

groups of blind inclined grooves (inclined grooves having one end open at the tread edge and one end terminating between the shoulders) such that each of the blind grooves terminates at the same predetermined distance from the longest blind groove of an axially opposed group. See figure 2. The expression "predetermined distance" is found in claims 39, 58, 111, 130, 135 and 154.

With respect to Europe 270, appellants comment that claims 54, 126 and 150 are patentable at least due to the direct or indirect dependency of these claims on one of the independent claims. In view of this comment, attention to directed to the examiner's remarks regarding the independent claims.

With respect to Europe 851, appellants comment that claims 59-62, 131-134 and 155-158 are patentable at least due to the direct or indirect dependency of these claims on one of the independent claims. In view of this comment, attention to directed to the examiner's remarks regarding the independent claims.

UNEXPECTED RESULTS

Appellants argue that (1) the claimed invention is designed to withstand the presence of extreme stresses, (2) the substantially continuous tread portions can absorb all the thermal mechanical stresses imparted to the tread during rolling without bending or deforming too much, and (3) the thermal mechanical degradation phenomena of the elastomeric portions in the presence of extreme stresses is drastically reduced so that the tire is allowed to maintain substantially constant performance independent of wear conditions of the tread (pages 19-20 of Brief filed 12-

12-07). This argument is not commensurate in scope with the claims because none of the claims require the above noted subject matter.

Appellants argue that appellants have shown an unexpected increase in performance of the claimed tire as compared to the conventional tire. The examples in the specification refer to asymmetric Pirelli Perzo, Bridgestone S-02, Michelin Pilot SX-MXX3 and Bridgestone Expedia S-01. See pages 21-29 of specification. With respect to photos of these tires, the examiner cited four references in the Advisory Action dated 12-5-06. As can be seen from these photos, none of the comparative tires mentioned in the specification comprise alternating groups of transversal grooves as is found in Hoover, Japan 408 and Sommers. The results in the specification have been considered but are not persuasive of non-obviousness. The claimed invention has not been compared with the closest prior art. No comparison has been made between (1) the claimed invention and (2) Hoover, Japan 408 or Sommers. It is emphasized that each of Hoover, Japan 408 and Sommers show that it was well known prior to the filing date of applicant's earliest application to provide a "non-motorcycle" tire with alternating groups of inclined transversal grooves.

Appellants argue that there is no requirement to show unexpected results over the specific art cited by the examiner. This argument is not persuasive because the claimed subject matter must be compared with the closest prior art in order to rebut a prima facie case of obviousness. MPEP 716.02(e).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Steven D. Maki

/Steven D. Maki/

Primary Examiner, Art Unit 1791
March 14, 2008

Conferees:

/Richard Crispino/
Supervisory Patent Examiner

/Steven Griffin/
Supervisory Patent Examiner

APPENDIX FOR EXAMINER'S ANSWER

This appendix for examiner's answer includes:

(1) USPTO translation for JP 06-247109

(2) copy of JP 04-154408

(3) copy of GB 2,224,472

(4) copy of EP 722,851.

(5) PTO 892 listing the above documents.

The references JP 04-154408, GB 2,224,472 and EP 722,851 were cited by appellants on the PTO 1449 filed 2-11-04 and are included in this Appendix so that the image file of this application contains scanned copies of the references.